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A Study of Cognitive and Social Functioning. Project II: A Study of the Attitudes of Parents of Deprived Children. Project III.

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This project deals with characteristic functioning of lower class educationally disadvantaged preschool children, the impact of the preschool experience, and the personality of the child and his readiness to gain from the educational process. The disadvantaged preschool children functioned intellectually and verbally below their middle class peers and were 8 months behind them in language development. Longitudinal data indicate that children who have had preschool training scored higher on test batteries in the first grade, that their language development is superior, and that their academic achievement and attitudes toward learning are significantly higher. Early education intervention is valuable to the development of self-confidence and greater trust in their environment. These children scored higher on dependency on teachers, on aggression, and on achievement striving than did children without preschool training. A study of mother-child interaction will continue, and a study of gainers, nongainers, and losers is underway. Twenty-eight tables and a list of other articles by the author are given. (DO)

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Project II

A STUDY OF COGNITIVE AND SOCIAL FUNCTIONING

Project III

A STUDY OF THE ATTITUDES OF PARENTS OF DEPRIVED CHILDREN

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ANNUAL REPORT

E. Kuno Beller

The report that follows has been organized in such a way that certain sections of our work which have reached a final stage will be discussed in considerable detail while other sections which deal with work in progress or studies that have just been undertaken will consist of brief summaries. In order to avoid repitition, we have enclosed several formal reports which have been prepared for presentation at professional meetings.

The first part of this report will deal with those areas of our work which have reached a more final stage and warrant more detailed reporting. This section has been organized around the following topics: A. Characteristic Functioning of Lower Class Educationally Disadvantaged Pre-School Children 1) Intellectual Functioning 2) Language Functioning 3) Personality Patterns B. The Impact of the Pre-School Experience 1) Intellectual Achievement 2) Language Functioning 3) Academic Achievement 4) Attitudes towards Learning C. The Personality of the Child and His Readiness to Gain from the Educational Process.

The second section of the report deals with research in progress both on Project 2 and Project 3. The third and final section deals with a newly initiated study that has not been previously mentioned or described.

A. CHARACTERISTIC FUNCTIONING OF LOWER CLASS EDUCATIONALLY DISADVANTAGED PRE-SCHOOL CHILDREN

1) Intellectual Functioning. The results of our own work support the general finding that the lower class disadvantaged pre-school child performs below his middle class peer on intellectual tasks. As can be seen in Table 1, this finding is confirmed on three different tests in successive years for children entering school at three different age levels.

The second major finding in this area which can also be seen from inspection of Table 1 is that the degree of poorer performance in the disadvantaged than in the middle class child varies from test to test. For example, lower class disadvantaged pre-school children do not deviate much from average on the Draw A Man Test by Goodenough. These disadvantaged children deviate more on the Stanford-Binet Test and receive scores much below average on the Peabody Picture Vocabulary Test. The interpretation of such differences between tests has been discussed in detail in an enclosed paper.[1]

It is clear from these findings that any estimate of depressed intellectual achievement in lower class deprived children must be qualified with reference to the test on which such an estimate has been based. It is important to note that the Peabody Picture Vocabu-

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[1] "The Impact of Pre-School Experience in Intellectual Development in Educationally Deprived Children"

TABLE 1

INITIAL AVERAGE IQ SCORES OF CHILDREN ENTERING NURSERY, KINDERGARTEN, AND FIRST GRADE IN TWO FOLLOW-UP STUDIES

INTELLIGENCE TEST	ENTERING GRADE					
	Nursery		Kindergarten		First Grade	
	N		N		N	
Stanford-Binet	55	92.3	53	91.2	58	85.8
Peabody Picture Vocabulary	156	72.3	45	79.4	58	74.5
Draw A Man	98	93.4	52	97.0	43	97.5

lary Test, which yields the lowest IQ score for our children, has been used very widely in studies of lower class deprived children. This underestimation does not make the test useless. Since the underestimation is consistent, it would make a correction feasible. This test has certain very desirable features and should be improved if at all possible. It can be administered in a much shorter period of time and requires much less training than the administration of the Stanford-Binet or other individually administered tests of intelligence. Moreover, we shall see below that the Peabody Test resembles the Stanford-Binet much more than the Draw A Man Test resembles the Stanford-Binet, although the former is used as widely as the Peabody Test in studies of deprived lower class children. This leads us to the next question, namely, what the correlation has been between these tests in all instances where we administered more than one of these tests to the same child or group of children.

The degree of intercorrelation between these tests is presented in Table 2. It can be seen that the Peabody Test correlates higher with the Stanford-Binet than does the Draw A Man Test. The correlation between the Peabody Test and the Draw A Man Test is very low, but both tests correlate more highly with the Stanford-Binet than they do with each other, which suggests that the two tests measure different aspects of the same general area of intellectual functioning. It is interesting to note that the intercorrelations between two pairs of these tests decrease consistently with age. This trend suggests that one has to be

TABLE 2

CORRELATIONS (r) BETWEEN STANFORD BINET (SB), DRAW A MAN (DAM) AND PEABODY PICTURE VOCABULARY (PPV) TEST IQ SCORES IN NURSERY, KINDERGARTEN AND FIRST GRADE CHILDREN

ITEM	NURSERY	KINDERGARTEN	FIRST GRADE
	(N = 58)	(N = 148)	(N = 146)
SB with DAM	.50 **	.40 **	.28 **
SB with PPV	— † (N = 44)	.63 **	.61 **
DAM with PPV	.25 *	.15	.13

** p < .01

* p < .05

† None of our groups had both of these two IQ tests.

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very careful in using different tests of intellectual achievement interchangeably as one moves from pre-school to elementary grades.

2) Language Functioning. It has been generally accepted that language development is one of the crucial problem areas in the education of lower class disadvantaged children. We were therefore particularly interested in finding a test of language functioning which would enable us to diagnose weaknesses and strengths in our children as they enter pre-school and to evaluate the impact of pre-school education and of special programs on the language functioning of these children. The Illinois Test for Psycholinguistic Abilities (ITPA) is the most elaborate instrument available for the assessment of language functioning in children. Since it has been constructed for diagnostic and remedial use with children handicapped in the language area, it was particularly well suited for our work. One of the important requirements for a language test to be useful to us was that it yield more than a global estimate of the child's language ability. The Illinois Test of Psycholinguistic Ability was constructed on the basis of a systematic analysis of different aspects of language functioning. The authors of the test presented evidence in support of the independency of the various subtests. For several reasons, we wished to establish for ourselves that the various subtests of the ITPA actually did measure different aspects of language functioning which were not highly correlated with one another. Table 2 represents the outcome of a factor analysis based on test findings

TABLE 3

FACTOR ANALYSIS OF LANGUAGE AGE SCORES BASED ON THE SUBTESTS OF THE ILLINOIS TEST OF PSYCHOLINGUISTIC ABILITIES ADMINISTERED TO ONE HUNDRED SEVENTY-SEVEN CHILDREN FOUR AND ONE HALF YEARS OLD

SUBTESTS	FACTOR I	FACTOR II	FACTOR III	FACTOR IV	FACTOR V	FACTOR VI	FACTOR VII	FACTOR VIII	FACTOR IX
Auditory-Vocal Automatic	.12	-.05	-.11	<u>.94</u>	.14	.10	.09	.11	.18
Visual Decoding	.18	.00	-.11	.10	.17	<u>.93</u>	.16	.15	.12
Motor Encoding	.14	-.11	-.11	.16	<u>.90</u>	.18	.09	.22	.17
Auditory-Vocal Association	.20	-.07	-.21	.31	.24	.19	.21	.24	<u>.79</u>
Visual-Motor Sequencing	<u>.89</u>	-.05	-.17	.14	.15	.20	.18	.19	.15
Vocal Encoding	.21	-.12	-.14	.14	.24	.17	.15	<u>.87</u>	.18
Auditory-Vocal Sequencing	.16	-.13	-.02	.09	.09	.15	<u>.94</u>	.12	.13
Visual-Motor Association	.14	-.04	<u>-.96</u>	.11	.10	.10	.02	.11	.13
Auditory Decoding	.04	<u>-.98</u>	-.03	.05	.09	-.00	.11	.09	.04

with our own group of children. Inspection of Table 3 shows that indeed all the nine different subtests represent separate factors. We could thus be assured in any further use of these test findings that we were working with an instrument which tapped a number of different aspects of language functioning in our children.

Our study of the language functioning in disadvantaged pre-school children entering nursery showed that our children were approximately eight months behind in their language development. Table 4 represents the average scores obtained by our children on the Illinois Test of Psycholinguistic Abilities. Our children perform quite consistently below average on seven of the nine subtests which tap a wide variety of language functioning. It is interesting to note that the subtest (Auditory-Vocal Automatic) on which our children perform poorest, is a test which measures routine mastery of grammatical language usage. At the other extreme, our children perform at least as well if not better than is to be expected for their chronological age on the Auditory-Vocal Sequencing Subtest, which involves rote memory. The value of these findings lies not only in that they reveal the level of backwardness among disadvantaged lower class children of pre-school age, but more importantly in pinpointing the specific area of greatest weakness and the area of greatest strength. It would be most interesting to put these findings to further use in curriculum experimentation. For example, would these children benefit most from special training in the area of their greatest weakness, that is, the routinized and automatic use of

TABLE 4

AVERAGE LANGUAGE AGES IN MONTHS BASED ON SUBTESTS OF THE ILLINOIS TEST OF PSYCHOLINGUISTIC ABILITIES ADMINISTERED TO ONE HUNDRED SEVENTY-SEVEN CHILDREN FOUR AND ONE HALF YEARS OLD

SUBTESTS	AVERAGE LANGUAGE AGE
Auditory-Vocal Automatic	39.5
Visual Decoding	46.0
Motor Encoding	46.1
Auditory-Vocal Association	45.4
Visual-Motor Sequencing	45.2
Vocal Encoding	45.0
Auditory-Vocal Sequencing	57.3
Visual-Motor Association	44.4
Auditory Decoding	49.7
Total Language Age	46.5

TABLE 5: COMPARATIVE FACTOR STRUCTURE OF 14 PERSONALITY MEASURES IN CLINICAL AND NON-CLINICAL PRESCHOOL CHILDREN

	FACTOR I				FACTOR II				FACTOR III			
	Clinical		Non-Clinical		Clinical		Non-Clinical		Clinical		Non-Clinical	
	Boys (N=41)	Girls (N=48)	Boys (N=82)	Girls (N=96)	Boys (N=41)	Girls (N=48)	Boys (N=82)	Girls (N=96)	Boys (N=41)	Girls (N=48)	Boys (N=82)	Girls (N=96)
Dependency												
Help	.86	.72	.79	.70	-.17	-.11	-.32	-.47	.07	.26	.07	.12
Recognition	.53	.74	.62	.71	.26	.33	-.03	.02	-.27	.25	-.03	.16
Contact	.79	.77	.74	.83	-.08	-.01	-.07	-.29	.12	-.05	.28	.09
Attention	.86	.79	.68	.75	-.16	.03	.10	-.11	.22	.47	.54	.42
Nearness	.92	.86	.76	.82	.04	.10	-.06	-.22	.06	.03	.05	.01
A. A. S.												
Work Satisfaction	.09	.07	-.01	-.11	.89	.81	.81	.72	-.18	-.08	-.37	.22
Routines	-.42	.08	-.34	-.36	.69	.55	.65	.65	-.13	-.01	-.05	-.13
Obstacles	-.20	.15	-.23	-.35	.77	.76	.88	.84	-.11	.27	.09	.03
Initiative	.07	.05	-.06	.09	.84	.63	.81	.71	-.03	.36	.09	.20
Completion	.04	.07	.15	.02	.84	.87	.88	.80	-.29	-.01	.18	-.10
Aggression												
Threat	.11	.07	.07	.16	-.06	.14	.00	-.04	.90	.92	.92	.94
Derogation	-.04	.32	.17	.16	.00	.06	.06	.06	.29	.63	.92	.85
Destruction	.08	.17	.13	.13	-.46	-.06	-.15	-.14	.75	.81	.84	.93
Attack	.28	.06	.05	.11	.08	.16	-.10	-.08	.78	.90	.92	.93

simple grammatical rules? Moreover, would these children benefit most from building such language mastery with a method reflecting their greatest strength, that is, rote memory? Whether one uses these or some other courses of action, it is clear that the data presented in Table 4 promise to provide a good basis for initiating experimentation in language training with disadvantaged lower class children of pre-school age.

3) Personality Patterns. Before I started working with lower class disadvantaged children, I had developed a series of personality measures which were validated on middle class children. The specific areas of personality functioning were emotional dependency of children on adults, independence or autonomous achievement striving, and aggression. These are three central areas in the socialization and education of children in any society. My particular interest in further investigation of these areas in deprived lower class children was not so much to find the absolute values of dependency, independency, and aggression for these children as to gain a better understanding of the dynamics and patterns of interaction between these personality functions in the disadvantaged pre-school child. A second factor of interest to me was the relationship between a child's personality and his intellectual or academic achievement.

With regard to my first interest, namely, the dynamics and patterning of personality functioning, I found in over a decade of work with middle class children that personality functions were patterned according to certain systematic principles of social learning theory in the interaction

between the child and his parents. For example, children were quite consistent in their manifestations of emotional dependence and this consistency in the child reflected certain stable practices on the part of the parents in relation to their children. The same was true for independence and aggression. For example, a child who was high in taking the initiative also tended to be high in persisting with what he started, and in completing what he initiated. As in the case of dependency, this inner consistency of autonomous achievement striving in the middle class child reflected a certain stability in his environment which made this inner consistency possible. The conceptual framework and implications of my earlier work on dependency, independence, and aggression with middle class children have been discussed in two papers enclosed with this report.[2] For present purposes, it will suffice to present some findings which illustrate the inner consistency in the personality structure and functioning of middle class pre-school children. The data contained in Table 5 are based on ten years of investigation of children attending therapeutic and normal nurseries and kindergartens. It can be seen from inspection of Table 5 that the various manifestations of dependency, of autonomous achievement striving or independence, and of aggression each show high internal consistency by clustering into three

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[2] "Exploratory Studies of Dependency"; "Sex Differences: The Factorial Structure of Personality Variables in 'Normal' and 'Emotionally Disturbed' Pre-School Children"

TABLE 6

COMPARATIVE FACTOR STRUCTURE OF 14 PERSONALITY MEASURES IN LOWER CLASS PRE-SCHOOL CHILDREN

	FACTOR I		FACTOR II		FACTOR III	
	Boys	Girls	Boys	Girls	Boys	Girls
Dependency						
Help	.23	.29	-.05	.06	.17	.27
Recognition	.21	.32	.02	-.01	.20	.38
Contact	.33	.46	-.02	-.06	.23	.21
Attention	.13	.42	-.03	.02	.34	.36
Nearness	.91	.92	.04	.00	.03	.15
A. A. S.						
Work Satisfaction	.01	-.00	.17	.30	-.31	-.17
Routines	.04	-.03	.17	.20	-.06	.02
Obstacles	.07	-.00	.21	.32	-.07	-.05
Initiative	-.02	-.01	.21	.32	.02	.12
Completion	.05	.00	.73	.85	-.17	-.04
Aggression						
Threat	.05	.10	-.01	.00	.94	.95
Derogation	.04	.10	.00	.02	.68	.86
Destruction	.01	.09	-.14	.04	.90	.92
Attack	.01	.09	-.04	.01	.94	.95

N = 156 Males
N = 156 Females

separate sets or factors. That is, the behaviors in each cluster hang together in a systematic and predictable way, reflecting stability in the child's background and environment.

I was interested to investigate the structure and dynamics of these personality functions in our lower class disadvantaged children. To this end, I collected the same type of data on over 300 pre-school children within the same age range as the middle class children on whom the analysis in Table 5 was based. Table 6 represents the same type of analysis for lower class deprived children as was carried out for middle class children reported in Table 5. Inspection of Table 6 makes it apparent that the patterning and structure of dependency and independence are radically different in the lower class child than in the middle class child. There is very little consistency in the manifestation of emotional dependency in lower class children, particularly in boys. This finding suggests that lower class children, particularly boys, do not experience much stability in their interactions with their parents, especially with regard to the gratification of dependency needs for support, praise, attention, and affection. The same conclusion is suggested by the findings in Table 6 with regard to independence or autonomous achievement striving. There is no inner consistency with regard to a child's taking the initiative, persisting, and completing what has been initiated. Thus, it would seem that the lower class deprived child does not have stable experiences with regard to early exploratory activity and autonomous attempts to master his environment. Only the area of aggression shows the same amount

of internal consistency as we found in middle class children.[3]

These radical differences in the patterning of personality functioning between middle and lower class children have important implications. To begin with, they reflect a background of inconsistency in socialization practices and interpersonal relationships between parent and child. More importantly, they reflect a disorganization and lack of cohesiveness in two vital areas of personality development, namely, dependence and independence. Since these data are based on the study of the child's functioning in relation to his teacher and in the nursery setting, they are of considerable importance for educational planning. Children who do not relate consistently to the teacher, and children who do not function consistently in their independent achievement efforts in the classroom, may be more difficult to educate in the sense of helping a child to relinquish gradually his emotional dependence and assume greater responsibility and self-sufficiency in his daily life. If children show little inner consistency in these areas of their functioning, it would seem to be inefficient to apply the same expectations and educational practices to these children as one usually applies to middle class children. Thus, one of the basic values of these data is that they show precisely how the lower class disadvantaged child differs from the middle class child in his personality dynamics, and by implication, that the educational objectives and methods applied to the middle class child will be misapplied if

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[3] However, high correlations between various aspects of aggression might be a measure of lack of differentiation rather than consistency.

carried over without considerable modification to the deprived lower class child. Moreover, these findings suggest that the provision of stable relationships between a nurturant adult and the child and the provision of stable experiences in the child's most elementary attempts to master his physical environment might be much more important as a first step in the educational process of these children than in pre-school education of middle class children. Repeated measurement of data such as these and repeated analysis to trace progress in the child's development towards greater inner consistency in his emotional dependence on adults and in his development of self-sufficiency or autonomous achievement striving might be a sensitive criterion for relaxing emphasis on stability and permitting greater diversity in the educational program and curriculum of these children. Whether one decides on this or an alternative course of action is less important at the moment than the realization that our data and the analysis we have carried out indicate a specific area and direction in which our attention must be focused in planning pre-school programs for disadvantaged lower class children.

Before I turn to the relationship between personality and intellectual achievement in our children, I wish to bring in another personality variable which I have studied intensively in both middle class and lower class children. I have reference to dependency-conflict. I have defined dependency-conflict as the difficulty a child has in accepting his dependency needs and in permitting himself to turn to this protective environment

for emotional and physical support.[3] Thus, a child who is conflicted over his dependency is a child who will be inhibited in expressing his needs for help, affection, and attention; who will use indirect and devious ways of getting gratification of his dependency needs; and finally, a child who betrays his conflict over dependency by fluctuating irrationally and unpredictably between excess and over-control in his manifestations of dependency needs. The analysis presented in Table 7 illuminates the place of dependency-conflict in the personality dynamics of our children. First of all, we note that dependency-motivation and dependency-conflict are almost entirely uncorrelated. This is an important finding because it demonstrates that we have succeeded in constructing two separate and different measures of dependency: one of these deals with the intensity of a child's dependence striving, while the other deals with the degree of conflict he experiences or manifests in his dependency needs.

The relationships between dependency-conflict and autonomous achievement striving as well as aggression are of substantive importance. The more conflicted a child is over his dependency, the more impaired is he in his autonomous achievement striving or in his self-sufficiency. Thus, those disadvantaged children who are inhibited in turning to the adult

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[4] In an enclosed paper, I have discussed in considerable detail the conceptual basis, as well as a series of measures which I have constructed to study dependency-conflict in children. "Dispositions Towards Dependency and Independency"

TABLE 7

CORRELATIONS (r) BETWEEN PERSONALITY MEASURES† IN NURSERY, KINDERGARTEN AND FIRST GRADE CHILDREN

PERSONALITY VARIABLES	NURSERY	KINDERGARTEN	FIRST GRADE
	(N = 174)	(N = 93)	(N = 96)
DC with DS	-.17 **	-.09	-.07
DC with AAS	-.34 **	-.50 **	-.70 **
DC with AGG	.08	.30 **	.25 *

** $p < .01$

* $p < .05$

† Dependency Striving (DS), Autonomous Achievement Striving (AAS), Aggression (AGG), Dependency Conflict (DC)

environment for help and support fail to develop a high level of motivation to function independently and self-sufficiently. To put it in another way, the disadvantaged lower class child who does not trust his environment sufficiently to seek and make use of physical and emotional support that might be available to him fails to develop confidence in himself to function independently and self-sufficiently. Finally, the relationship between dependency-conflict and aggression is less strong but still statistically significant and quite important. Children who have conflict in the area of dependency also have difficulty in controlling their agression.[5] Thus, the child who is conflicted over his dependency not only fails to develop self-sufficiency, but also seems to experience difficulty in controlling his aggression. Both relationships, especially the former, appear to increase with age. (See Table 7.)

When we turn to the relationship between personality and intellectual performance in our children, we find that autonomous achievement striving and dependency-conflict related consistently in opposite direction to performance on intelligence tests. As can be seen in Table 8, autonomous achievement striving correlates consistently positively with performance on three different intelligence tests, whereas dependency-conflict correlates consistently negatively with performance on the same three

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[5] Although we have not yet investigated curvilinearity between dependency-conflict and aggression, my earlier work in this area points in this direction. A curvilinear relationship would imply that children with dependency-conflict are likely to fluctuate between lack of control as well as over-control of aggression.

TABLE 8

CORRELATIONS (r) OF PERSONALITY MEASURES† WITH INTELLECTUAL ACHIEVEMENT IN NURSERY, KINDERGARTEN AND FIRST GRADE CHILDREN

PERSONALITY VARIABLES	NURSERY	KINDERGARTEN	FIRST GRADE
	Stanford Binet Scores		
	(N = 49)	(N = 93)	(N = 86)
DS	.01	.20	.02
AAS	.30 *	.32 **	.43 **
AGG	-.02	-.02	.02
DC	-.13	-.30 **	-.41 **
	Draw A Man Scores		
	(N = 45)	(N = 91)	(N = 95)
DS	-.11	.01	-.03
AAS	.18	.23 *	.36 **
AGG	-.15	-.16	-.15
DC	-.04	-.20	-.31 **
	Peabody Picture Vocabulary Scores		
	(N = 94)	(N = 82)	(N = 95)
DS	-.01	.16	-.07
AAS	38 **	.24 *	.29 **
AGG	-.07	-.02	.11
DC	-.33 **	-.34 **	-.21 *

** $p < .01$
* $p < .05$

† Dependency Striving (DS), Autonomous Achievement Striving (AAS), Aggression (AGG), Dependency Conflict (DC)

tests. Among these children, the more motivated a child is to be self-sufficient in coping with his environment, the higher is his intellectual achievement as measured by our tests. However, the more inhibited a child is to manifest his dependency needs and turn to his adult environment for support, the more handicapped a child is in his intellectual achievement. The fact that the magnitude of these relationships increases with age on two of our tests suggests that they might reflect a developmental process in our lower class deprived children.

These findings have clear implications for curriculum planning, especially during nursery and kindergarten. Much thought should be given to procedures for encouraging these children in their autonomous achievement striving, that is, in their efforts to explore things on their own and to carry through to completion what they started. Even more important seems to be the need for helping these children to develop greater trust in their adult environment to overcome their inhibitions and conflicts over turning to protective adults for emotional and physical support. To judge from our findings, such efforts would greatly enhance the effectiveness of programs for training these children to become competent in areas of intellectual achievement.

B. THE IMPACT OF THE PRE-SCHOOL EXPERIENCE

1) Intellectual Achievement. In our first follow-up study, we compared three groups of children: our original nursery group, a second group who entered kindergarten without prior nursery experience, and a

third group who entered first grade without any prior schooling.[6] The effectiveness of early education intervention was clearly demonstrated in our findings. All tests yielded the same picture. Those children who attended our pre-kindergarten nursery classes received the highest scores on the Stanford-Binet, the Draw A Man Test, the Philadelphia Verbal Ability Test, and the Peabody Picture Vocabulary Test. The children who entered first grade without any kindergarten or pre-school experience received the lowest scores on every one of these four intelligence tests. Only one of the four tests picked up the effects of the particular schools our children attended, while another test was more sensitive to sex differences. Altogether, the four tests differed considerably with regard to their stability and sensitivity in picking up differences among our three groups.

We followed all our children through the first grade and retested them on three of the four tests on which the first follow-up study in kindergarten was carried out. Since a number of children had moved away from the four original schools in which we began to study them, a massive effort was undertaken to trace the children who had moved away. We were able to recover 31 children who had transferred to 24 different schools. Examiners had to be sent out to all these different schools to

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[6] Our first findings in this area have been reported in an enclosed paper, "The Impact of Pre-School Experience on Intellectual Development in Educationally Deprived Children." I shall confine myself here to a brief summary of the findings reported in the enclosed paper and report in more detail our findings on the second phase of our follow-up study.

carry out individual re-testing of each of the children who had moved away from our four original schools. This effort, although quite expensive, was highly rewarding in that we were able to keep over 90% of our three groups intact.

The overall conclusion from our findings, which is reported in Tables 9 through 21, is that the impact of earlier educational intervention of intellectual achievement has continued practically undiminished in the second year of our follow-up study. This trend is clearly shown in Table 9. Children in Group I who experienced educational intervention of pre-school age continue to score highest on our different tests of intellectual achievement, while children in Group III who experienced educational intervention latest, that is, not until they entered first grade, scored lowest on two of the three tests of intellectual achievement. A close examination of Tables 9 through 21 reveals first of all that the three different tests continue to differ from one another with regard to special sensitivities in some areas and insensitivities in other areas.[7]

The Stanford-Binet Test continues to reveal clear-cut differences among our three groups who were classified on the basis of the amount of educational experience. This trend can be seen in Tables 10 and 11. These tables also show that although all children gain significantly

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[7] The fourth test, namely, the Philadelphia Verbal Abilities Test, is not usually administered at the end of the first grade and therefore was not included in the present battery.

TABLE 9

MEAN SCORES ON THREE MEASURES OF INTELLIGENCE (STANFORD BINET, GOODENOUGH DRAW A MAN TEST, AND THE PEABODY PICTURE VOCABULARY TEST) FOR THREE GROUPS OF CHILDREN: GROUP I NURSERY AND KINDERGARTEN, GROUP II KINDERGARTEN ONLY, AND GROUP III NEITHER NURSERY NOR KINDERGARTEN

GROUPS	N	KINDERGARTEN	FIRST GRADE
		Stanford Binet	
I	39*	96.6	98.3
II	52	91.2	94.7
III	56	86.1	89.8
		Draw A Man	
I	38	96.9	103.6
II	51	97.0	100.0
III	56	99.1	100.3
		Peabody Picture Vocabulary	
I	35	84.6	90.7
II	44	80.3	85.9
III	55	74.7	82.4

* We were able to recover 13 more children from this group for the retesting a year later.

TABLE 10

AVERAGE STANFORD-BINET IQ SCORES OF CHILDREN IN FOUR DIFFERENT SCHOOLS WITH DIFFERENT AMOUNTS OF EDUCATIONAL BACKGROUND EXPERIENCE AT THE END OF KINDERGARTEN AND FIRST GRADE: GROUP I NURSERY AND KINDERGARTEN, GROUP II KINDERGARTEN ONLY, AND GROUP III NEITHER NURSERY NOR KINDERGARTEN

GROUPS	SCHOOLS	N	KINDERGARTEN	FIRST GRADE
I	A	11	91.4	94.8
	B	9	96.9	104.0
	C	9	94.1	98.3
	D	10	104.1	103.4
II	A	19	86.1	90.4
	B	11	91.6	94.4
	C	10	96.3	95.3
	D	12	96.1	101.3
III	A	12	88.8	82.2
	B	16	82.2	89.8
	C	13	89.7	89.2
	D	15	91.5	96.3
I + II + III	A	42	85.98	89.24
	B	36	88.72	93.86
	C	32	93.00	93.66
	D	37	96.38	99.84

TABLE 11

ANALYSIS OF VARIANCE OF STANFORD-BINET IQ SCORE CHANGES FROM KINDERGARTEN TO FIRST GRADE FOR THREE GROUPS OF CHILDREN WITH DIFFERING AMOUNTS OF EDUCATIONAL EXPERIENCE

SOURCE	SS	df	MS	F
Between Subj.		146		
A (Educ'l Exper.)†	4,972.17	2	2486.08	7.45 **
B (Schools)	4,399.08	3	1466.36	4.39 **
AB	312.14	6	52.02	< 1
Subj w. grps.	45,064.25	135	333.81	< 1
Within Subj.				
C (Pre-Post Change)	601.66	1	601.66	12.29 **
AC	6.53	2	3.26	< 1
BC	125.81	3	41.94	< 1
ABC	320.88	6	53.48	1.09
C x Subj w. grps.	6,607.39	135	48.94	< 1

** p .01

† A = Amount of educational experience

TABLE 12

AVERAGE STANFORD-BINET IQ SCORES OF BOYS AND GIRLS WITH DIFFERENT AMOUNTS OF EDUCATIONAL BACKGROUND EXPERIENCE AT THE END OF KINDERGARTEN AND FIRST GRADE: GROUP I NURSERY AND KINDERGARTEN, GROUP II KINDERGARTEN ONLY, AND GROUP III NEITHER NURSERY NOR KINDERGARTEN

	N	KINDERGARTEN	FIRST GRADE
Group I			
Boys	24	96.7	99.4
Girls	15	97.7	96.9
Group II			
Boys	29	90.4	93.8
Girls	23	92.9	95.9
Group III			
Boys	26	85.1	89.3
Girls	30	87.0	90.2
Groups I, II & III			
Boys	79	90.58	94.00
Girls	68	91.29	93.62
Total	147	90.91	93.82

TABLE 13

ANALYSIS OF VARIANCE OF STANFORD-BINET IQ SCORE CHANGES FROM KINDERGARTEN TO FIRST GRADE FOR THREE GROUPS OF CHILDREN WITH DIFFERING AMOUNTS OF EDUCATIONAL EXPERIENCE

SOURCE	SS	df	MS	F
Between Subj.		146		
A (Educ'l Exper.) †	4,434.52	2	2217.76	6.31 **
B (Sex)	63.50	1	63.50	< 1
AB	118.39	2	59.20	< 1
Subj w. grps.	49,540.30	141	351.34	< 1
Within Subj.				
C (Pre-Post Change)	488.92	1	488.92	10.27 **
AC	89.31	2	44.66	< 1
BC	39.77	1	39.77	< 1
ABC	30.70	2	15.35	< 1
C x Subj w. grps.	6,710.01	141	47.58	< 1
		293		

** $p < .01$
† A = Amount of educational experience

from kindergarten to the end of the first grade, intellectual achievement of children varies as a function of the school they have attended. Tables 12 and 13 show that the Stanford-Binet Test does not pick up sex differences or differential gain of boys and girls with different amounts of educational experience. The same table also shows that neither sex gained more or less as a result of their educational experience during the first grade.

As indicated earlier, the Stanford-Binet Test revealed differences in intellectual achievement between children from different schools. However, these differences did not interact with the child's gain in intellectual achievement, that is, the differences could not be attributed to classroom experience in the first grade. Some of these differences may be due to differences in quality of teaching in the pre-school and kindergarten program from school to school, but we have no direct evidence to that effect for findings based on the Binet Test.

The Goodenough Test gives us precisely this type of evidence As can be seen in Tables 14 and 15, the impact of the educational program in the first grade differs sharply from school to school. One of the schools brings about the largest increase from the beginning to the end of the first grade, while another school deviates even more sharply by effecting an adverse change in the child as a result of his first grade experience. We must therefore conclude that even though the Draw A Man Test fails to pick up differences resulting from earlier educational intervention in our children, this test is the most sensitive of the

TABLE 14

AVERAGE DRAW A MAN TEST IQ SCORES OF CHILDREN IN FOUR DIFFERENT SCHOOLS WITH DIFFERENT AMOUNTS OF EDUCATIONSL BACKGROUND EXPERIENCE AT THE END OF KINDERGARTEN AND FIRST GRADE: GROUP I NURSERY AND KINDERGARTEN, GROUP II KINDERGARTEN ONLY, AND GROUP III NEITHER NURSERY NOR KINDERGARTEN

GROUPS	SCHOOLS	N	KINDERGARTEN	FIRST GRADE
I	A	11	97.6	105.8
	B	9	94.3	92.6
	C	8	97.5	105.2
	D	10	95.4	109.9
II	A	19	98.0	101.7
	B	11	96.9	96.1
	C	10	105.0	103.5
	D	11	88.0	97.9
III	A	12	99.9	103.5
	B	16	103.6	95.2
	C	13	97.8	107.7
	D	15	94.9	96.6
I + II + III	A	42	98.48	103.29
	B	36	99.22	94.83
	C	32	96.94	102.41
	D	37	90.43	97.97

TABLE 15

ANALYSIS OF VARIANCE OF GOODENOUGH DRAW-A-MAN IQ SCORE CHANGES FROM KINDERGARTEN TO FIRST GRADE FOR THREE GROUPS OF CHILDREN WITH DIFFERING AMOUNTS OF EDUCATIONAL EXPERIENCE

SOURCE	SS	df	MS	F
Between Subj.		144		
A (Educ'l Exper.) †	130.99	2	65.50	< 1
B (Schools)	1,941.51	3	647.17	1.12
AB	1,558.94	6	259.82	< 1
Subj w. grps.	77,141.31	133	580.01	< 1
Within Subj.		145		
C (Pre-Post Change)	1,035.45	1	1035.45	6.71 *
AC	381.54	2	190.77	1.23
BC	1,429.33	3	476.44	3.09 *
ABC	786.27	6	131.04	< 1
C x Subj w. grps.	20,514.02	133	154.24	< 1

* $p < .05$

† A = Amount of educational experience

TABLE 16

AVERAGE DRAW A MAN IQ SCORES OF BOYS AND GIRLS WITH DIFFERENT AMOUNTS OF EDUCATIONAL BACKGROUND EXPERIENCE AT THE END OF KINDERGARTEN AND FIRST GRADE: GROUP I NURSERY AND KINDERGARTEN, GROUP II KINDERGARTEN ONLY, AND GROUP III NEITHER NURSERY NOR KINDERGARTEN

	N	KINDERGARTEN	FIRST GRADE
Group I			
Boys	23	94.1	102.1
Girls	15	101.2	105.4
Group II			
Boys	28	94.3	99.4
Girls	23	100.3	100.8
Group III			
Boys	26	91.7	94.7
Girls	30	106.5	104.2
Groups I, II & III			
Boys	77	93.38	98.61
Girls	68	103.24	103.31
Total	145	98.00	100.81

TABLE 17

ANALYSIS OF VARIANCE OF GOODENOUGH DRAW-A-MAN IQ SCORE CHANGES FROM KINDERGARTEN TO FIRST GRADE FOR THREE GROUPS OF CHILDREN WITH DIFFERING AMOUNTS OF EDUCATIONAL EXPERIENCE

SOURCE	SS	df	MS	F
Between Subj.		144		
A (Educ'l Exper.) †	200.71	2	100.36	< 1
B (Sex)	3,465.11	1	3465.11	6.35 *
AB	892.81	2	446.40	< 1
Subject w. grps.	75,808.25	139	545.38	< 1
Within Subj.		145		
C (Pre-Post Change)	650.57	1	650.57	4.03 *
AC	389.88	2	194.94	1.21
BC	295.30	1	295.30	1.83
ABC	69.21	2	34.60	< 1
C x subj w. grps.	22,413.81	139	161.25	< 1

* $p < .05$

† A = Amount of educational experience

tests we have used in picking up the effect of type of educational program on gains and losses in intellectual achievement over time. We might add that this test differs from all other tests we have used by being the most clearly non-verbal performance measure of intellectual functioning in children. As reported in an earlier paper, the Draw A Man Test continues to be most sensitive to sex differences in our children.[8] Girls score consistently higher than boys on this text. (See Tables 16 and 17.)

The outcome of our analysis based on the Peabody Picture Vocabulary Test is presented in Tables 18 to 21. We find that the results of this test are almost identical to those obtained from the Stanford-Binet Test which were discussed earlier in this section.

In summary, all three major factors that we attempted to control emerged as significant determinants of intellectual achievement and of gain in intellectual achievement in lower class disadvantaged children. These three factors were the timing of educational intervention or the age at which a child entered school, the sex of the child, and the particular school in which a child received his education. Our findings on the last factor are particularly relevant to "Follow-Through" research. Our use of a battery of tests has been very productive, in that our tests differed widely from one another in tapping the three main factors influencing a child's intellectual achievement and changes in his achieve-

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[8] "The Impact of Pre-School Experience on Intellectual Development in Educationally Deprived Children"

TABLE 18

AVERAGE PEABODY PICTURE VOCABULARY TEST IQ SCORES OF CHILDREN IN FOUR DIFFERENT SCHOOLS WITH DIFFERENT AMOUNTS OF EDUCATIONAL BACKGROUND EXPERIENCE AT THE END OF KINDERGARTEN AND FIRST GRADE: GROUP I NURSERY AND KINDERGARTEN, GROUP II KINDERGARTEN ONLY, AND GROUP III NEITHER NURSERY NOR KINDERGARTEN

GROUPS	SCHOOLS	N	KINDERGARTEN	FIRST GRADE
I	A	9	78.0	85.8
	B	9	76.7	84.3
	C	7	92.3	92.1
	D	10	92.4	100.0
II	A	12	77.8	80.6
	B	11	82.4	86.9
	C	9	80.3	86.1
	D	12	78.8	89.9
III	A	12	71.8	77.1
	B	16	71.7	77.4
	C	12	77.2	85.9
	D	15	78.3	90.1
I + II + III	A	33	75.67	80.73
	B	36	76.22	82.06
	C	28	81.96	87.11
	D	37	82.27	92.73

TABLE 19

ANALYSIS OF VARIANCE OF PEABODY PICTURE VOCABULARY IQ SCORE CHANGES FROM KINDERGARTEN TO FIRST GRADE FOR THREE GROUPS OF CHILDREN WITH DIFFERING AMOUNTS OF EDUCATIONAL EXPERIENCE

SOURCE	SS	df	MS	F
Between Subj.		133		
A (Educ'l Exper.) †	3,503.88	2	1751.94	5.63 **
B (School)	4,137.81	3	1379.27	4.44 **
AB	3,406.64	6	567.77	< 1
Subj w. grps.	37,938.27	122	310.97	1.83
Within Subj.		134		
C (Pre-Post Change)	2,763.18	1	2763.18	45.86 **
AC	40.91	2	20.46	< 1
BC	293.56	3	97.85	1.62
ABC	329.01	6	54.84	< 1
C x Subj w. grps.	7,350.48	122	60.25	< 1

** $p < .01$

† A = Amount of educational experience

TABLE 20

AVERAGE PEABODY PICTURE VOCABULARY TEST IQ SCORES OF BOYS AND GIRLS WITH DIFFERENT AMOUNTS OF EDUCATIONAL BACKGROUND EXPERIENCE AT THE END OF KINDERGARTEN AND FIRST GRADE: GROUP I NURSERY AND KINDERGARTEN, GROUP II KINDERGARTEN ONLY, AND GROUP III NEITHER NURSERY NOR KINDERGARTEN

	N	KINDERGARTEN	FIRST GRADE
Group I			
Boys	21	86.7	93.8
Girls	14	81.6	86.2
Group II			
Boys	24	81.6	87.0
Girls	20	77.6	84.4
Group III			
Boys	25	80.2	86.0
Girls	30	70.1	79.5
Groups I, II & III			
Boys	70	82.61	88.67
Girls	64	74.95	85.52
Total	134	78.96	85.73

TABLE 21

ANALYSIS OF VARIANCE OF PEABODY PICTURE VOCABULARY IQ SCORE CHANGES FROM KINDERGARTEN TO FIRST GRADE FOR THREE GROUPS OF CHILDREN WITH DIFFERING AMOUNTS OF EDUCATIONAL EXPERIENCE

SOURCE	SS	df	MS	F
Between Subj.		133		
A (Educ'l Exper.) †	2,776.48	2	1388.24	4.14 *
B (Sex)	2,256.68	3	752.23	2.24
AB	267.72	6	44.62	< 1
Subj w. grps.	40,914.15	122	335.36	< 1
Within Subj.		134		
C (Pre-Post Change)	2,708.44	1	2708.44	30.61 **
AC	35.92	2	17.96	< 1
BC	12.04	1	12.04	< 1
ABC	98.47	2	49.24	< 1
C x Subj w. grps.	11,324.82	128	88.48	< 1

* $p < .05$

** $p < .01$

† A = Amount of educational experience

ment over time.

2) Language Functioning. As we approach the question of whether a nursery program has an appreciable effect on the language functioning of nursery children, we might infer an affirmative answer from an earlier finding. We found that nursery children tended to score higher on the Stanford-Binet Test than all other children who did not have nursery, while they failed to perform better on the non-verbal Goonenough Draw A Man Test. From this finding, one might have speculated that the nursery program had an appreciable effect on the language development of those children who were involved in the experimental nursery project. However, as we turn to more direct evidence to evaluate this question, we find no support for such an inference. Table 22, which presents a comparison between nursery children and control children on changes in their language functioning from the onset of the nursery to kindergarten, does not support the inference from our earlier finding. None of the detailed subtests of the Illinois Test of Psycholinguistic Abilities shows a significantly greater gain in language functioning in our nursery children (experimentals) than in our non-nursery children (controls). In fact, the only significant difference that emerges is a greater gain in the control group on one of the subtests, namely, comprehension of speech (Auditory Decoding). However, whereas the nursery program per se had no effect on language development that we could detect in our follow-up study, the experimental language program described in an

TABLE 22

AVERAGE LANGUAGE QUOTIENTS BASED ON ITPA SUBTESTS ADMINISTERED AT THE BEGINNING OF NURSERY (PRE) AND KINDERGARTEN (POST) FOR 69 CHILDREN WITH (EXPERIMENTAL) AND 35 CHILDREN WITHOUT (CONTROLS) NURSERY EXPERIENCE

SUBTESTS	EXPERIMENTALS		CONTROLS	
	Pre	Post	Pre	Post
Auditory-Vocal Automatic	77.3	76.2	67.4	67.4
Visual Decoding	93.7	100.2	80.6	94.0 [2]
Motor Encoding	91.1	90.9	87.3	79.1
Auditory-Vocal Association	87.5	95.9	83.7	87.1 [2]
Visual-Motor Sequencing	88.4	87.8	84.9	79.4
Vocal Encoding	91.0	89.8	76.1	79.5 [1]
Auditory-Vocal Sequencing	113.6	109.9	105.7	104.2
Visual-Motor Association	85.2	101.8	83.6	100.2 [2]
Auditory Decoding	95.2	96.4	77.6	87.8 [1, 3]
TOTAL	92.6	93.6	83.2	86.2 [1]

1 Analysis of variance yield significant F $p < .05$ for difference between experimentals and controls
2 for difference between pre - post scores
3 for interaction between 1 and 2

enclosed paper[9] did have striking and apparently prolonged effects on language functioning in development of our disadvantaged children.

3) Academic Achievement. In the second year of our follow-up study, the most relevant evidence for the impact of pre-school eduation became available when we obtained school grades for children in our three different groups. As can be seen in Table 23, the timing of educational intervention is very significantly reflected in school grade at the end of the first grade. Children who had any pre-school experince, whether it was nursery or kindergarten, achieve significantly higher grades in arithmetic, reading, and writing that children who entered first grade with no prior education. Apparently, it made little difference whether a child had nursery and kindergarten or only kindergaten. Both background experiences clearly affected a child's grades compared with children with no pre-school experience.

Our findings at the end of the first grade are strongly supported by subsequent analysis of grade marks obtained for the same children from the first report card of the second grade. The outcome of this anaysis is presented in Table 23. The impact of early educational intervenion is now showing up in a number of important subjects in addition to arithmetic and reading. The children with pre-school and kindergaren are superior to those who entered first grade without prior schooli;

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9 "Cognitive Styles and Methods of Language Training"

TABLE 23

CUMULATIVE MARKS AND CHI SQUARES AT THE END OF FIRST GRADE FOR CHILDREN WITH DIFFERENT AMOUNTS OF EDUCATIONAL BACKGROUND: GROUP I NURSERY AND KINDERGARTEN, GROUP II KINDERGARTEN ONLY, GROUP III NEITHER NURSERY NOR KINDERGARTEN

SUBJECT	GROUP	FREQUENCIES (worst)*	FREQUENCIES (best)	CHI SQUARE	d.f.	P
Arithmetic	I	25	27	9.89	2	< .01
	II	24	22			
	III	39	12			
Reading	I	37	15	6.86	2	< .05
	II	33	13			
	III	46	5			
Writing	I	27	24	9.88	2	< .01
	II	16	30			
	III	34	17			

* Worst equals marks of C, D, F; best equals marks of A, B.

TABLE 24

MARKS AND CHI SQUARES ON FIRST REPORT CARD IN SECOND GRADE FOR CHILDREN WITH DIFFERENT AMOUNTS OF EDUCATIONAL BACKGROUND: GROUP I NURSERY AND KINDERGARTEN, GROUP II KINDERGARTEN ONLY, GROUP III NEITHER NURSERY NOR KINDERGARTEN

SUBJECT	GROUP	FREQUENCIES (worst)*	(best)	CHI SQUARE	d.f.	P
Arithmetic	I	15	35			
	II	17	26	11.22	2	< .005
	III	28	16			
Spelling	I	19	28			
	II	20	22	7.73	2	< .025
	III	29	13			
Social Studies	I	23	21			
	II	29	13	12.17	2	< .005
	III	35	5			
Science	I	36	23			
	II	28	15	6.41	2	< .05
	III	36	7			
Speaking	I	29	21			
	II	27	19	7.39	2	< .05
	III	36	8			

* Worst equals marks of C, D, F; best equals marks of A, B.

TABLE 24 continued

SUBJECT	GROUP	FREQUENCIES (worst)*	(best)	CHI SQUARE	d.f.	P
Reading	I	36	14	6.84	2	< .05
	II	38	6			
	III	42	4			
Written Expression	I	35	9	6.56	2	< .05
	II	33	8			
	III	38	1			
Art	I	24	22	2.39	2	N.S.
	II	19	18			
	III	26	13			
Health Education	I	22	25	2.32	2	N.S.
	II	18	23			
	III	25	17			
Handwriting	I	28	20	1.12	2	N.S.
	II	24	22			
	III	29	17			
Work Habits	I	27	24	2.65	2	N.S.
	II	25	23			
	III	32	16			
Citizenship Practices	I	30	21	2.12	2	N.S.
	II	22	26			
	III	28	20			

in spelling, social studies, science, speech, and written expression. Pre-School experience does not appear to affect performance in such areas as art, health education, work habits, handwriting, and citizenship practices; children with prior schooling show a trend towards superior grades even in these areas, but the trends fail to reach statistical significance.

This demonstrated prolonged effect of earlier educational intervention on academic achievement in practically all subjects is indeed remarkable and most encouraging.

4) Attitudes Towards Learning. When our original follow-up group completed the first grade, we collected data on the child's attitudes towards study and learning and towards school in general. This was done through teacher ratings of the child. All teachers of classes which included children from our three follow-up groups were asked to select two or three children who had the best attitudes towards study and learning and towards school, as well as children who appeared to be the most and the least able in their classroom performance. Since 110 of our original children were located in seven classes of our four original schools, these ratings were carried out by 37 teachers in 34 different schools. The outcome of these ratings is reported in Table 25. It can be seen that the children with a background of nursery and kindergarten had the highest percentage in the groups with the best attitudes (i.e., 9 out of 11 with the best attitudes towards study and

TABLE 25

RATINGS OF PUPIL ATTITUDES, ABILITIES AND POPULARITY IN FIRST GRADE FOR CHILDREN WITH DIFFERENT AMOUNTS OF EDUCATIONAL BACKGROUND: GROUP I NURSERY AND KINDERGARTEN, GROUP II KINDERGARTEN ONLY, GROUP III NEITHER NURSERY NOR KINDERGARTEN

QUESTION	GROUP	FREQUENCIES (best)	FREQUENCIES (worst)	CHI SQUARE	d.f.	P
1: especially able vs. especially slow	I	8	2	3.47	2	N.S.
	II	4	2			
	III	4	6			
2: best vs. worst attitude toward study and learning	I	9	2	9.07	2	< .02
	II	4	5			
	III	1	7			
3: most positive vs. most negative attitudes towards school	I	6	2	6.01	2	< .05
	II	6	2			
	III	3	8			
4: most vs. least popular among other children	I	5	8	2.70	2	N.S.
	II	5	2			
	III	3	6			

learning, and 6 out of 8 with the best attitudes towards school in general). By contrast, the groups without nursery and without kindergarten experience had the highest percentage of children with the worst attitudes (i.e., 7 out of 8 with the worst attitudes towards study and 8 out of 11 with the most negative attitudes towards school). The ratings on children who were especially able vs. those who were especially slow in their work and on most vs. least popular children in the classroom went in the same direction, that is, a high percentage of most able or popular ones in the groups with prior schooling and a low percentage of especially able or popular ones in the group with no previous schooling. However, these differences fell short of significance.

The same ratings were redone at the time of the first report card in the second grade. The outcome of this analysis is reported in Table 26. These findings confirm the earlier ones obtained at the end of first grade with the only difference that the effect of earlier educational intervention on ratings of pupil's ability in the classroom has now become highly significant. These data offer evidence for the beneficial effects of pre-school and kindergarten experience on the child's attitude towards learning and school in general. Early educational intervention affects not only cognitive functioning and academic achievement but also the child's attitude towards learning and towards his school.

TABLE 26

RATINGS OF PUPIL ATTITUDES, ABILITIES AND POPULARITY IN SECOND GRADE FOR CHILDREN WITH DIFFERENT AMOUNTS OF EDUCATIONAL BACKGROUND: GROUP I NURSERY AND KINDERGARTEN, GROUP II KINDERGARTEN ONLY, GROUP III NEITHER NURSERY NOR KINDERGARTEN

QUESTION	GROUP	FREQUENCIES (best)	FREQUENCIES (worst)	CHI SQUARE	d.f.	P
1: especially able vs. especially slow	I	16	5	10.76	2	< .005
	II	10	9			
	III	5	15			
2: best vs. worst attitude toward study and learning	I	17	4	8.88	2	< .02
	II	12	5			
	III	8	13			
3: most positive vs. most negative attitudes towards school	I	15	9	6.20	2	< .05
	II	13	4			
	III	6	11			
4: most vs. least popular among other children	I	12	9	1.12	2	N.S.
	II	5	5			
	III	5	8			

C. THE PERSONALITY OF THE CHILD AND HIS READINESS TO GAIN FROM THE EDUCATIONAL PROCESS

In an earlier part of this report, it was shown that certain personality variables correlate with intellectual achievement of deprived lower class children, while other personality variables failed to have any bearing on how well or poorly a child performed in the cognitive domain. We shall now turn to the issue of changes in personality from nursery to first grade.[10] Inspection of Table 27 suggests the following generalizations. Those first graders who had the experimental nursery and kindergarten experience appear to be higher on dependency on teachers, on aggression, and on autonomous achievement striving than children from the other two groups. The same group of children are lowest on conflict over dependency. In sharp contrast to this group, children from Group III are lower than other first graders in their autonomous achievement striving and higher than other first graders in their inhibition or conflict over dependency.

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[10] The report which follows is tentative and may have to be supplemented or replaced depending on the outcome of further analysis. Since we found a lack of internal consistency among our measures of dependency-motivation and among our measures of autonomous achievement striving, the use of total dependency scores and total scores of autonomous achievement striving based on the summation of component scores will have to be justified by a certain item analysis which we plan to carry out in the near future. If the forthcoming analysis fails to justify the use of total scores, it will be necessary to re-analyze our data. For these reasons, we are limiting ourselves in the present report to data based on total scores of dependency, autonomy, and aggression which are least likely to necessitate re-analysis.

TABLE 27

AVERAGE PERSONALITY MEASURES* OF FIRST GRADE CHILDREN WITH DIFFERENT AMOUNTS OF EDUCATIONAL BACKGROUND: GROUP I NURSERY AND KINDERGARTEN, GROUP II KINDERGARTEN ONLY, GROUP III NEITHER NURSERY NOR KINDERGARTEN

	GROUP I (N = 31)	GROUP II (N = 28)	GROUP III (N = 37)
DS †	4.30	3.56	3.72
AAS ‡	4.35	4.29	3.41
AGG ‡	4.54	3.56	3.44
DC †	3.55	3.95	4.25

‡ Difference between groups $p < .05$ when tested by Analysis of Variance

† Difference between groups $p < .10$ when tested by Analysis of Variance

* Dependency Striving (DS), Autonomous Achievement Striving (AAS), Aggression (AGG), Dependency Conflict (DC)

TABLE 28

PREDICTIVE CORRELATIONS BETWEEN PERSONALITY MEASURES† AT A GIVEN POINT IN TIME AND INTELLECTUAL ACHIEVEMENT A YEAR LATER

NURSERY TO KINDERGARTEN

PERSONALITY MEASURES	STANFORD BINET (N = 46)	DRAW A MAN (N = 98)	PEABODY PICTURE VOCABULARY (N = 98)
DS	-.64 **	-.06	-.12
AAS	.23	.36 **	.43 **
AGG	.08	-.20 *	-.11
DC	-.22	-.15	-.25 *

KINDERGARTEN TO FIRST GRADE

PERSONALITY MEASURES	STANFORD BINET (N = 86)	DRAW A MAN (N = 86)	PEABODY PICTURE VOCABULARY (N = 86)
DS	.12	.16	.15
AAS	.18	.24 *	.15
AGG	-.02	-.04	.01
DC	-.18	-.13	-.04

** $p < .01$

* $p < .05$

† Dependency Striving (DS), Autonomous Achievement Striving (AAS), Aggression (AGG), Dependency Conflict (DC)

For the sake of clarifying the meaning of these findings, I shall discuss the implications of two pairs of personality variables here, namely, autonomous achievement striving and dependency-conflict on the one hand and dependency-motivation and aggression on the other hand. It is important to refer back to an earlier finding reported in Table 8 which showed than only autonomous achievement striving and dependency-conflict correlated with intellectual achievement. Therefore, the present finding that both Groups I and II, which had pre-school experience, are higher in autonomous achievement striving and lower in dependency-conflict suggests that an increase in autonomous achievement striving and a decrease in dependency-conflict may be related to significantly higher intellectual performance of these same two groups on three different tests of intellectual achievement. In other words, children who have had the benefit of pre-school experience are more highly motivated to be self-sufficient in their achievement striving and simultaneously have greater trust in their adult environment so that they seek from it the physical and emotional support which it has to offer.

The elevation of dependency-motivation and aggression in children who had had nursery experience becomes clearer in its meaning when we reiterate that these two areas of personality have been uncorrelated with intellectual achievement on three successive age levels, that is, in the nursery, in kindergarten, and in the first grade. This finding alone makes it clear that an elevation in emotional dependency on the teacher and in the expression of aggression is not contradictory to the superior

functioning of these very same children in the areas of intellectual achievement. What then is the meaning of increased dependency and aggression in children from Group I, that is, those who had the nursy experience? It may simply mean that these children have developed a closer emotional bond with the teacher, which represents a delayed development of what occurs normally in middle class children of our society. The emotional tie with the teacher provides the teacher with a greater opportunity to reach the child, to socialize him, and to influence h than is the case for those children who have not developed a strong emotional tie with the teacher. Thus, heightened dependency might b a positive sign, meaning that the child is now more amenable to socii-zation and to the educational influence from the teacher, rather th a sign of fixation on an infantile level of functioning. The same inference can be made with regard to heightened aggression in those children who had had the nursery experience. Most of these childre experience a great deal of frustration in their daily lives away fr the classroom. A higher expression of aggression in a first grade ass-room by any one of these children may simply mean that the child is ess inhibited in giving vent to his reactions to a very frustrating lifin the classroom than is true for other children. The positive meanin of this finding for educational opportunities and the role of the scho in shaping the child's future will be more fully appreciated after I he reported one of my most vivid impressions in pre-schools for depriv lower class children.

Shortly after I started training teachers to rate children in the areas of dependency, autonomous achievement striving, and aggression, I encountered considerable resistence from teachers who had the same background as the children they taught when I asked these teachers to report incidents of aggression. Time and again, I was confronted with the statement that these children do not manifest any aggression, particularly in the nursery and in kindergarten. Apparently, a good many of these teachers were reluctant to either perceive or permit aggression in these lower class. highly deprived children coming from backgrounds which generate a great deal of frustration, and therefore, at least the potential for aggression. The difficulty these teachers experience in either perceiving or accepting aggression in deprived pre-school children greatly weakens the efficiency of their potential effectiveness as socializers of aggression. By denying or suppressing aggressive behavior in the nursery or in kindergarten, the teacher simply pushes the aggression out of the classroom and removes herself as an effective agent in modifying the child's ability to cope with hostile and aggressive impulses. In the light of this experience, I would say that the nursery children who manifest more aggression in the first grade are not less socialized than their peers who keep this area of behavior away from the classroom and therefore out of reach from the teacher. The stable and intimate relationship which the nursery child was able to experience and develop with his teacher has encouraged him to display a much wider range of even undesirable behavior

in the presence of this protective figure whom he has come to trust. It is in this sense, I maintain, that the heightened manifestation of emotional dependence on the teacher and of aggression represented a late positive development in deprived children which indicates that these children are much more amenable than their peers to the educational process and to socialization by the school. Together with higher autonomous achievement striving and lower inhibition in the manifestation of dependency, these changes represent greater self-confidence and greater trust in the human environment in children who had had the benefit of a nursery experience compared to those who were not exposed to the educational process until they entered first grade.

RESEARCH IN PROGRESS

Data collection for Phase IV of Follow-Up Study 1 and Phase III of Follow-Up Study 2 has been almost entirely completed. The subjects in Follow-Up Study 1 have now completed second grade, while the subjects in Follow-Up Study 2 have now completed the first grade. The data in these two studies are currently being processed for analysis. It is anticipated that the outcome of these analyses will be reported sometime during the next year. Data collection will continue during the following year in both of our studies.for both second and third grade children whom we have been following since nursery and kindergarten.

Data collection for Phase I of the mother-child interaction experiment

described in the last progress report has been completed. The data consisted of measures of nurturance deprivation and of interest vs. disinterest manifested by parents of 200 children who were included in the study. On the basis of this data, the children were classified into a more and less deprived group. Subsequent to this classification, children from the two groups were assigned to a learning study in which two different types of reinforcement were employed, that is social reinforcement and intrinsic reinforcement. Another condition that was varied in this learning experiment was the extent of "attention withdrawal" (i.e., 0, 5, 10, 15, and 20 minutes). Since the design was set up for a 2 x 2 x 5 factorial analysis of variance, we employed twenty groups of ten children in each of the groups for the study. Although the analysis of the data has just begun, I wish to mention some impressionistic findings which have to await confirmation by statistical analysis. We found that children coming from homes with greater deprivation in the area of nurturance had on the average lower IQ's, i.e., 11 points, than children coming from homes with less nurturance deprivation. In contrast to our expectation, only the children from the more deprived homes performed better on problem solving tasks with increasing amounts of attention withdrawal. Attention withdrawal had no such effect on children coming from less deprived homes. Yet, the children coming from less deprived homes manifested greater ability to learn regardless of attention withdrawal. These are a few of the major empirical trends that were evident from inspection of the data but have to be confirmed by statistical analysis which is currently underway. Phase II of the mother-child interaction

experiment has begun in the form of a pilot study. The nature of Phase II is described in the previous progress report. We have begun to observe mother-child interactions and are working on a reconstruction of a system of observation which will overcome some of the shortcomings of the previous system that was employed in our original study. The two major shortcomings of the earlier system of observation have been first that categories of observation were not entirely independent of one another and secondly that the observation was limited to maternal behavior and did not include direct observation of the child other than in the form of ratings at the end of the observation. We anticipate that the pilot study will run throughout the summer and that data collection of Phase II of the mother-child interaction experiment with the 200 children and their mothers will begin sometime in the fall of 1967.

NEWLY INITIATED RESEARCH

A major study on which we have just completed data collection dealt with a comparison of gainers, non-gainers, and losers among children who have attended the year around nursery classes of the Headstart program. Measures of gain, no change, and loss were based on pre and post Binet testing carried out by Temple University as part of the E and R Center program on 113 children who formed the sample for evaluative study in the Philadelphia area. The study attempted to investigate the following questions: 1) Do gainers make different dependency requests of teachers than non-gainers or losers? 2) Do gainers make different use of help received

from teachers than non-gainers or losers? 3) Do gainers react differently to no response or rejection from teachers of their dependency requests, e.g., reasserting their requests, seeking gratification from other adults or peers, or attempting to substitute independent activity for the nurturance and help that was not forthcoming from the teacher vs. regressing, withdrawing, or manifesting displaced aggression? 4) Do gainers receive more reinforcement in the form of attention from adults or peers for individual achievement oriented behavior? 5) And finally, are gainers more able than non-gainers or losers to solve problems under conditions of intrinsic reinforcement?

The first four questions were investigated by means of an observational technique which involved observing sequences of child behavior - teacher reaction - child reaction to teacher reaction. The fifth question was investigated by means of an experimental learning situation consisting of 30 trials in which the child had to learn a concept involving discrimination of color and form.

Each of the 36 subjects was observed over six 15 minute periods. The observations were carried out by six different observers who were assigned randomly to cover the observations of each child.

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*(Copies of these Reports may be obtained from Professor Beller)

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